

L 3361-66

ACC NR: AP5025601

mixture, because then we are dealing with the direct diffusion of Cr and Fe into the carbide layer of the steel in the presence of direct contact between the grains of ferrochrome and the surface of the specimen. Orig. art. has: 2 tables.

ASSOCIATION: none

SUBMITTED: 00

NO REF SOV: 006

ENCL: 00

OTHER: 001

SUB CODE: MM, GC

2/2

L 3361-66 ENT(m)/EET(c)/EWP(1)/EWA(a)/T/EWP(t)/EWP(z)/EWP(b) IJP(c) MJW/JD/JG  
 ACC NR: AP5025601 UR/0129/65/000/010/0048/0050  
 621.785.53:542.944

AUTHOR: Titov, V. K.; Makarov, Ye. F.

TITLE: Chromizing of steel with the aid of ammonium halides

SOURCE: Metallovedeniye i termicheskaya obrabotka metallov, no. 10, 1965, 48-50

TOPIC TAGS: chromizing, halide, ammonium salt, atomic property, chromium steel, ferrochrome

ABSTRACT: Steel U10 was experimentally chromized in mixtures containing 40% ferrochrome + ammonium halides. The chromizing was performed in a nichrome container at 1100°C for 4 hr, with the amount of absorbed Cr being determined by the persulfate-silver method of Samsonov et al. (Analiz tugoplavkikh soedineniy, Moscow, Metallurgizdat, 1962). Findings: The amount of absorbed Cr increases with increasing atomic weight of the halogen forming the ammonium halide; at the same time, the mean Cr concentration in the carbide layer (assuming that the entire Cr is concentrated in this layer and its density is 6.75 g/cm<sup>3</sup>) increases, as does the depth of this layer. Steel absorbs iron from the gaseous phase, because the activity of Fe in the carbide layer is lower than in the ferrochrome. Chromizing by direct pouring of active mixture (to which NH<sub>4</sub>I is added) onto the specimens produces better results than placement of the specimens in a chamotte layer surrounded by the chromizing

Card 1/2

ACC NR: AP7004569

the tin sorbed on the surface in the form of SnO (surface chemisorption). It was found that the electric-field gradient at the Sn<sup>119</sup> nucleus in SnO increases with an increase in temperature and significantly exceeds its value for the crystal state of SnO. The following were evaluated on the basis of the experimental findings: the absolute values of the mean square displacements of the SnO<sub>2</sub> · nH<sub>2</sub>O molecule on the surface and of tin atoms within the molecule as a function of temperature; the zero-vibration energy of the tin atoms and molecules; the energy at which the bond between molecule and adsorption center on the globule surface disappears; the absolute values of the mean square displacements of tin atoms in SnO molecules in a direction perpendicular or parallel to the surface, as well as their temperature dependence. The authors point out that by extrapolating the absolute values of the mean square displacements as a function of temperature it is also possible to obtain the displacement values at absolute zero temperature, and this in turn makes it possible to evaluate the corresponding vibration frequencies. The value of a temperature dependence such as the one obtained by the authors for physical sorption makes it possible in principle to find the form of the potential well for sorbed atoms or molecules. These questions will be considered by the authors in subsequent publications. The authors express their gratitude to I. Ye. Neymakr, V. M. Chertov, and I. Ya. Garzanov for their interest and aid in the experimental work, and to Yu. M. Kagan for his discussion of the results. (JPRS;

Card 2/2 34,657 SUB CODE: 07,20 / SUBM DATE: 08Jun65 / ORIG REF: 011 / OTH REF:

ACC NR: AP7004569

SCURCE CODE: UR/0056/65/049/005/1424/1430

AUTHOR: Suzdalev, I. P.; Go'danskiy, V. I. Makarov, Ye. F.; Plachinda, A. S.; Korytko, L. A.

ORG: Institute of Chemical Physics, AN SSSR (Institut khimicheskoy fiziki AN SSSR)

TITLE: Investigation of the dynamics of the motion of tin atoms at the surface of silica gel by means of the Mossbauer effect

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki v. 49, no. 5, 1965, 1424-1430

TOPIC TAGS: Mossbauer effect, silica gel, sorption, tin, chemisorption

ABSTRACT: The authors used the nuclear gamma resonance (Mössbauer effect) method to investigate the dynamics of the motion of tin atoms sorbed on the surface of silica gel. A special cryostat was constructed for temperature measurements. All measurements were made on a nuclear gamma resonance spectrometer with source in the form of  $\text{Sn}^{119}\text{O}_2$ . Analysis of the experimental results indicated that the tin atoms at the surface exist in two states -- the tetravalent and the bivalent. Investigation of the temperature dependence of the Mössbauer-effect probability indicated that the tetravalent tin is fixed on the surface through physical sorption; and the bivalent tin, through chemisorption. Considerable asymmetry of the doublet components was found in the spectrum of

Card 1/2

0926 1408

L 36229-66

ACC NR: AP6024517

2

incides in direction with the applied electric field, with the magnetic moment of the tetrahedral sublattice parallel and that of the octahedral sublattice antiparallel to the applied field. Since the internal magnetic field at the iron nucleus is always negative relative to the magnetic moment of its ion, it is concluded that the fields of the nuclei, both tin and iron, situated in the same (octahedral) sublattice of the yttrium iron garnet have the same sign. Several explanations of this fact will be discussed in a future article. The authors thank Yu. S. Sherbinin for making possible the operation of the apparatus and Yu. P. Baydorovtsev for supplying the magnet. Orig. art. has: 1 figure.

SUB CODE: 20/ SUBM DATE: 20May66/ ORIG REF: 002/ OTH REF: 002

Card 2/2 *lll*

L 36229-66 EWT(n)/EWP(t)/ETI IJP(c) JD

ACC NR: AP6024517

SOURCE CODE: UR/0386/66/004/002/0063/0064

AUTHOR: Gol'danskiy, V. I.; Devisheva, M. N.; Makarov, Ye. F.; Novikov, G. V.; Trukhtanov, V. A. 52

ORG: Institute of Chemical Physics, Academy of Sciences SSSR (Institut khimicheskoy fiziki Akademii nauk SSSR) 50

TITLE: Sign of the magnetic field at tin nuclei in a ferroelectric matrix 19

SOURCE: Zh eksper i teor fiz. Pis'ma v redaktsiyu. Prilozheniye, v. 4, no. 2, 1966, 63-64

TOPIC TAGS: tin, ferrite, Mossbauer spectrum, spectral distribution, magnetic moment, line splitting

ABSTRACT: The purpose of the investigation was to determine the sign of the indirectly induced (super-exchange) field at the nuclei of nonmagnetic tin atoms introduced into an yttrium-iron-garnet matrix, previously observed by the authors (Pis'ma ZhETF v. 1, no. 1, 1965; Phys. Lett. v. 15, no. 4, 1965). To this end the authors investigated the Mossbauer spectra of the same garnet sample placed in an external magnetic field. The change in the intensity ratios of the various spectral components, due to application of the magnetic field, is attributed to the change in the character of the angular distribution of the components of the transitions  $\pm 1/2$  ( $4/2$ )  $\rightarrow \pm 1/2$  ( $1/2$ ). The distinctly observed increase in the splitting of the Mossbauer spectrum components indicates that the internal magnetic field at the tin nuclei co-

Card 1/2

L 5334-66

ACCESSION NR: AP5021136

others. This confirms a suggestion previously made by two of the authors (Goldanskiy and Makarov, Phys. Letters v. 14, 111, 1965). The estimated upper limit of  $\Delta R/R$ , is  $1.6 \times 10^{-4}$ . A more detailed analysis of the formula for the chemical shift will be necessary in the case of tin compounds with more complex structures than tetrahedral. Orig. art. has: 1 figure and 24 formulas.

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute of Chemical Physics, Academy of Sciences, SSSR); Institut khimii Akademii na k Moldavskoy SSR (Institute of Chemistry, Academy of Sciences, Moldavian SSR)

SUBMITTED: 24 Mar 65

44.85  
ENCL: 00

SUB CODE: SS

NR REF SOV: 005

OTHER: 010

Card

2/2 *md*

L 5534-66 EWT(1)/EWT(m) DIAAP/IJP(c)

ACCESSION NR: AP5021136

UR/0056/65/049/002/0699/0706

AUTHORS: Bersuker, I. B.; Gol'danskiy, V. I.; Makarov, Ye. F.

TITLE: Analysis of the variation of the  $\text{Sn}^{119}$  nuclear charge radius based on its Mossbauer spectra

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 49, no. 2, 1965, 699-706

TOPIC TAGS: tin, tin compound, Mossbauer spectrum, crystal lattice structure

ABSTRACT: The authors present a more complete treatment of the distribution of the electron shells in compounds of tin, and its influence on the electron density at the nucleus. A general formula is derived for the dependence of the chemical shift on the parameters of the molecular orbitals in these compounds. From estimates of these parameters for the tetrahalogenides of tin it is concluded that the percentage change in the charge radius ( $\Delta R/R$ ) of the excited nucleus is negative, in contrast with the previously obtained data by

Card 1/2

0701 1144

22560-65  
ACCESSION NR: AF5002172

COMPONENTS ARE DISSEMINATED FOR EACH OF THE DESCRIBED APPLICATIONS. Orig. art. has:  
O DISSEM.  
[04]

ASSOCIATION: none

SUBMITTED: 00

NO REF SOV: 00

ENCL: 00

OTHER: 607

SUB CODE: NP

ATD PRESS: 3170

1. 22560-55

ACCESSION NO: A15002172

formed after the decay of  $\text{Co}^{57}$ , with the nonradioactive  $\text{Fe}^{57}$  (absorber) and the radioactive tin nucleus  $\text{Sn}^{119}$  (emitter) with the nonradioactive  $\text{Sn}^{119}$  (absorber). The relative velocity of two objects can be determined in the range from 0.005 cm/sec to tens of cm/sec by placing an emitter on one object and the appropriate absorber with a detector device on the other. Changes in the characteristics of the Doppler spectrum with temperature at very low temperatures make possible the construction of a thermometer for temperatures below 1 K. Constant or pulsed pressures above  $10^4$  atm can be measured by introducing radioactive atoms into the component subjected to the pressure. By placing the gamma-ray source on a vibrating component the product of the vibrational frequency and amplitude can be accurately measured when the product is greater than 0.001 cm/sec. The direction and magnitude of displacements from  $10^{-4}$  to  $10^{-1}$  cm can be determined for a component within a closed volume if the displacement velocity is less than about 1 cm/sec. However, it is indicated that considerable improvement can be made. The rotational velocity of an isolated system can be measured with an accuracy of 0.2 rev/sec for a system of radius 1 m. The resonance scattering phenomenon can be used to detect certain elements in rocks and minerals. For example, a proposed device can detect tin in concentrations as low as 0.02% in 1 to 15 minutes. The basic configurations of the

REF ID: A530272

8/0032/65/031/001/0061/0065

AUTHORS: Gol'dshteyn, V. I.; Makarov, Ye. F.

TITLE: Some possible applications of the Mössbauer effect

SOURCE: *Zavodskaya laboratoriya*, v. 31, no. 1, 1965, 61-65

TOPIC TAGS: Mössbauer effect, resonance absorption, resonance scattering, gamma absorption, gamma emission, gamma scattering, velocity measurement, low temperature, photo pressure effect, vibration measurement

ABSTRACT: This review article outlines in general terms a number of possible applications of the Mössbauer effect. The phenomenon of resonance absorption or scattering of gamma radiation occurs when the recoil energy is completely absorbed by the entire crystal in which the emitting and absorbing nuclei are located. The effect is extremely sensitive; resonance absorption or scattering completely disappears with a change in energy of the gamma ray of only one part in a trillion (and in other cases even a thousand times less). Thus, the Mössbauer effect is a decisive indicator of any effect which changes the energy of absorption or emission nuclei. Among the possible pairs of emission and absorption nuclei the most studied and most promising for practical application are the radioactive iron nucleus  $^{57}\text{Fe}$  (emitter),

1. 23290-65

ACCESSION NO: AP5000916

where  $a_1$  refers to linear and  $a_2$  to crosslinked fractions of the polymer. Orig. art. has:  
1 table, 1 figure and 2 formulas.

ASSOCIATION: Institut Khimicheskoy fiziki Akademii nauk SSSR (Chemical physics insti-  
tute, Academy of Sciences, USSR); Moskovskiy Institut neftekhimicheskoy i gazovoy promy-  
shlennosti imeni I. M. Gubkina (Moscow Institute of the Petrochemical and gas industry)

SUBMITTED: 28/10/64

ENCL: 00

SUB CODE: OC

NO REF SOVI: 00

OTHER: 001

Cont. 3/3

L 23290-35

ACCESSION NR: AP8000918

indicating the high mobility of ferrocenyl radicals in the polymeric structure. Insoluble polymers showed a marked decrease in quadrupole scattering as compared with ferrocene derivatives or soluble polymers. The spectra showed characteristics observed for ferric salts and the formation of ferric cations by electron detachment from iron. Mössbauer effects at room temperature were significantly higher than the effects measured for the soluble polymers. The difference is ascribed to the crosslinked structure and rigidity of molecules in the insoluble polymers. The presence of two doublets in the 80K spectra of insoluble polymers corresponds to the electronic structures of iron in conjugated three-dimensional links and in ordinary ferrocenyl links of the linear polymer fraction. Thus, the Mössbauer spectra can be evaluated to estimate the degree of crosslinking in polymers of ferrocene. By accounting for the concentration of iron in the polymers and for the dimensions of absorbers, the measured values can be reduced to the absolute probability of Mössbauer effects in ferric polymers,  $T_A$ . The degree of crosslinking is defined by the relation

$$f = \frac{T_A}{T_A + T_D} \cdot 100\%$$

Card 2/3

1 23290-65  
 (1)/EWT(n)/EPT(s)/EPR/ETP(s)/ETD(t)/T  
 AP0000015RPL WW/RM  
 AUTHOR: Belov, V. F., Vishnyakova, T. P., Makarov, Ye. F., Panshin, Ya. M.,  
 Sokol'skaya, T. A., Shaban, R. A., Trokhanova, Y. A., Gerasimov, V. I. (Corresponding  
 member of USSR Academy of Sciences)  
 TITLE: The study of ferrocene copolymers by means of the Moessbauer effect  
 SOURCE: AN SSSR Doklady, v. 159, no. 4, 1984, 831-834  
 TOPIC TAGS: ferrocene copolymers, ferroorganic polymer, Moessbauer effect, polymer  
 crosslinking, gamma absorption spectrum

ABSTRACT: The electronic structure of iron in ferrocene polymers and the crosslinking of such polymers was studied from Moessbauer spectra, measuring the dependence of the resonant absorption of  $\gamma$ -ray quanta on the relative velocities of source and absorber. Cobalt-57 served as the source, and the polymers used as absorbers included soluble and insoluble polyferrocenes, polyvinylferrocenes, and copolymers of ferrocene with acetone, naphthalene, alpha-naphthalene, p-dichlorobenzene, salicylaldehyde, benzaldehyde, and pthalaldehyde. All soluble polymers gave spectra at 80K similar to those of ferrocene with doublets and approximately 10% Moessbauer effect. At room temperature, the Moessbauer effect of such polymers was smaller than for ferrocene.

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ACCESSION NR: AP4036726

degree of  $sp^2d$  ionicity of the hybridized tetravalent Sn-F bond, with horizontal F atoms in a basic polymer crystal forming crosslink bonds between Sn and two other ( $p_zd_z^2$ ) SnF-bonds which evidently are ionic. During the migration from  $SnF_4$  to  $K_2SnF_6$  and  $Cs_2SnF_6$ , i.e., from the octahedron with a  $D_{4h}$  symmetry to  $O_h$  with six ( $sp^3d^2$ ) Sn-F equivalent bonds, the quadrupolar splitting disappeared. Instead, the increase in the degree of molecular symmetry was accompanied by a strong decrease in the Debye-Vallerovskiy factor (especially at room temperature), while the chemical displacement remained constant. Orig. art. has: 2 figures and 2 tables.

ASSOCIATION: Institut khimicheskoy fiziki. Akademii nauk SSSR (Institute of Chemical Physics, Academy of Sciences SSSR)

SUBMITTED: 31Jan64

DATE ACQ: 03Jun64

ENCL: 00

SUB CODE: OC

NO REF SOV: 008

OTHER: 002

Card 2/2

ACCESSION NR: AP4036726

S/0020/64/156/002/0400/0403

AUTHOR: Gol'danskiy, V. I. (Corresponding member); Makarov, Ye. F.; Stukan, R. A.; Sumarokova, T. N.; Trukhtanov, V. A.; Khrapov, V. V.

TITLE: Characteristics of Mossbauer effect for tin compounds with a coordinate number six

SOURCE: AN SSSR. Doklady\*, v. 156, no. 2, 1964, 400-403

TOPIC TAGS: Mossbauer effect, gamma fluorescence, Debye Vallerovskiy factor, Mossbauerian atom, polymer crystal, crosslink bond, quadrupolar splitting, chemical displacement, tin compound, ionicity, crystal structure

ABSTRACT: The authors demonstrate that resonant  $\gamma$ -fluorescence without yield (the Debye-Vallerovskiy factor) and the character of the temperature curve essentially depend on the crystal-structure relationship of Mossbauerian atoms. Two tables show the amount of chemical displacement in the compounds investigated and the af' quantities for some of these compounds at temperatures of  $T = 78^{\circ}\text{K}$  and  $300^{\circ}\text{K}$ . In addition, a probable structure of  $\text{SnF}_4$  is illustrated. The strong quadrupolar splitting in the subject problem is explained by the essential differences in the

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12/851-65

ACCESSION NUMBER: AP4048424

density of iron ( $10 \text{ mg/cm}^2$ ). The source was a stainless steel plate impregnated with  $\text{Co}^{57}$  radioactive nuclei. The internal magnetic field was determined by measuring the distance between the components of the Zeeman splitting. The results showed that the density of the s electrons (determined from the chemical shift) in the nuclei and in the investigated compounds is practically the same. The local magnetic field on the Fe nuclei decreased with increasing saturation magnetization in some ferrites and increased in others, and an explanation is offered for this difference. Orig. art. has: 3 tables.

ASSOCIATION: Institut Khimicheskoy fiziki AN SSSR (Institute of Chemical Physics AN SSSR); Institut kristallografii AN SSSR, Moscow (Institute of Crystallography AN SSSR)

SUBMITTED: 09 June 64

SUB CODE: SS, MM

NR REF SOV: 003

ENCL: 00

OTHER: 005

Card: 2/2

1. RUSS-65 71(1)/71(2)/ED(1)/EWP(1)/EWP(2) Feb JUF(c)/AEDC(a)/SSD/  
AFML/ASWP-2/SSD(g)/SSD(1) JD  
ACCESSION NO: AP4048424 6/0181/64/005/011/3435/3437

AUTHORS: Belov, V. F.; Devishcheva, M. N.; Zheludov, L. S.; Makarov,  
Yef. F.; Brukan, R. A.; Trukhtanov, V. A.

TITLE: Mossbauer effect in manganese and manganese-magnesium fer-  
rites

SOURCE: Fizika tverdogo tela, v. 6, no. 11, 1964, 3435-3437

TOPIC TAGS: manganese alloy, magnesium ferrite, Mossbauer effect,  
saturation magnetization, internal magnetic field

ABSTRACT: The purpose of this study was to obtain information on  
the properties of the internal magnetic fields at the  $\text{Fe}^{57}$  in the  
ferrites and to obtain other data on the Mossbauer effect in solid  
solutions of ferrites with spinel structure and with different Mn  
atom contents. The absorbers used were ferrites in powdered form,  
mixed with paraffin and pressed into tablets of 10 cm<sup>2</sup> area (surface

Cont 1/2

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Mössbauer's spectra of complex compounds of iron with  
diacetylthiosemicarbazone oxime. Dokl. AN SSSR 151 no.6:1352-1355  
Ag '63. (MIRA 16:10)

1. Institut khimicheskoy fiziki AN SSSR i Institut khimii AN  
Moldavskoy SSR. 2. AN Moldavskoy SSR (for Ablov). 3. Chlen-  
korrespondent AN SSSR (for Gol'danskiy).

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031500038-6

L 13829-53  
 Pr-1 RM/WN/30 EWP(j)/EPP(s)/EWI(1)/EWP(q)/EWI(n)/BDS AITTC/ASD Po-4/  
 ACCESSION NR: AP3003557 S/0020/63/151/002/0357/0360 75  
 AUTHOR: Gol'danskiy, V. I. (Corr. member, AN SSSR); Makarov, Ye. F.; Stukan, R. A.;  
 Trukhtanov, V. A.; Khrapov, V. V. 74  
 TITLE: Analysis of the structure of polymeric organo-tin oxides  $R_2SnO$  by Mossbauer effect  
 SOURCE: AN SSSR. Doklady, v. 151, no. 2, 1963, 357-360  
 TOPIC TAGS: Sn, Mossbauer effect  
 ABSTRACT: New assumptions are proposed on the structure of  $R_2SnO$  organo-tin molecules, based on the presentation of the results of the Mossbauer effect, investigations in these oxides and related compounds. The Mossbauer spectra for all these compounds consist of two lines. Also the probability of the Mossbauer effect for some  $R_2SnO$  organo-tin oxides is investigated. "In conclusion, the authors express their sincere gratitude to Ye. M. Panov, O. A. Ptitsyna, and N. I. Sheverdina for submitting preparations of tin-organic compounds." Orig. art. has: 2 figures, 5 formulas, and 1 table.

Card 1/21

Inst. of Chemical Physics, Academy of Sci.

The difference of the two peaks in ...

S/056/63/044/002/054/065  
B163/B186

are considered to give evidence for the view stated above. There is 1 figure.

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute of Chemical Physics of the Academy of Sciences USSR)

SUBMITTED: November 12, 1962

Card 3/3

The difference of the two peaks in ...

S/056/63/044/002/054/065  
B163/B186

triphenylchlorostannane crystals and for two different angles of orientation of the specimen with respect to the direction of the beam of  $\gamma$  quanta. Cryoscopic determination of the molecular weight in benzene and camphor showed that there was no molecular association. The measurements were made at 78°K with the IKhF AN SSSR instrument with a  $\text{SnO}_2$

source. Isotropic specimens were prepared as layers of finely ground powder on an aluminum substrate. Other anisotropic specimens were prepared by melting and subsequent slow cooling on an aluminum substrate, in order to obtain coarsely crystalline lamellae, preferentially oriented along the substrate. The isotropic as well as the anisotropic specimens were oriented at angles of 90° and 45°, respectively, with respect to the beam of  $\gamma$  quanta. With the isotropic specimen, the asymmetric spectrum was the same for both angles. At 90°, the shape of the spectrum of the anisotropic specimen is different from that of the isotropic specimen. This excludes the possibility of an explanation of the difference of the two peaks by the assumption that singlet lines of two different chemical compounds are superimposed. If the anisotropic specimen is turned to 45°, there is again a change in the spectrum. The experimental results

Card 2/3

S/056/63/044/002/054/065  
3163/3186

AUTHORS: Gol'danskiy, V. I., Makarov, Ye. F., Khrapov, Y. V.  
TITLE: The difference of the two peaks in the quadrupole splitting  
of Mössbauer spectra  
PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 44,  
no. 2, 1963, 752-755

TEXT: In stannous-organic compounds such as triphenylchlorostannane  $\text{Sn}(\text{C}_6\text{H}_5)_3\text{Cl}$ , an asymmetry in the peaks of the doublet splitting of the Mössbauer spectra was found. It is shown that the quadrupole splitting of the Mössbauer spectra of isotropic polycrystalline specimens generally gives peaks of different shape and height, and that these peaks are equal only in the special case of the isotropic Mössbauer effect. This means that the asymmetry can be explained without assuming the presence of two different chemical compounds, and that it occurs even in isotropic polycrystalline specimens as a direct consequence of the anisotropy of the Mössbauer effect. In order to test this view the asymmetry of the two Mössbauer peaks was studied in relation to the degree of orientation of

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Investigation into the...

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B101/B144

observed to be greatly changed through the spectra of various disproportionation products  $\text{Ph}_4\text{SnI}_{4-1}$  being superimposed. Hence it is concluded that the Mossbauer effect can be used not only to study the chemical structure but also to solve problems of chemical kinetics and radiation chemistry. There are 2 figures.

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute of Chemical Physics of the Academy of Sciences USSR)

SUBMITTED: July 21, 1962

Card 4/5

S/020/62/147/001/018/022  
B101/B144

Investigation into the...

polynomial,  $f(\cos\theta) = \sum a_k \bar{P}_k(\cos\theta)$  is the factor determining the intensity of the Mössbauer line,  $a_k$  the decay coefficient, it follows that if  $\sigma_{13} \text{ tot} / \sigma_{11} \text{ tot} = (2\sqrt{5}a_0 + a_2) / (2\sqrt{5}a_0 - a_2) \neq 1$  (with  $a_2 \neq 0$ ) and  $-2\sqrt{5} < a_2/a_0 < 2\sqrt{5}$ , each of the peaks of the Mössbauer doublet may become higher than the other one according to the ratio  $a_0/a_2$ . This ratio can be determined experimentally. Assuming a quadrupole splitting of the Mössbauer line in  $\text{SnF}_4$  and  $\text{Ph}_3\text{SnHal}$ ,  $q = 6.9 \cdot 10^{18} \text{ x v/cm}^2$  is obtained where  $q = \partial^2 v / \partial x^2$  is the gradient of the electric field in the region of the  $\text{Sn}^{119}$  nucleus, and  $x$  is the degree of ionization of the bond. For  $\text{Ph}_3\text{SnHal}$   $x \approx 0.55$  with  $\text{Hal} = \text{I}$ ;  $x \approx 0.7$  with  $\text{Hal} = \text{Br}$ ;  $\text{Cl}$  and  $x \approx 1$  with  $\text{Hal} = \text{F}$ . Another possible interpretation of the asymmetrical splitting might be the different hybridisation of the  $sp^3d^2$  bonds. In order to explain this problem it is suggested that the effective charges of the halogen and tin atoms be determined directly. When an equimolecular mixture of  $\text{SnPh}_4$  and  $\text{SnI}_4$  was irradiated with 1.6-Mev electrons the Mössbauer spectrum was

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Investigation into the...

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B101/B144

given by A. J. P. Boyle, D. S. P. Bunbury, C. Edwards (Proc. Phys. Soc., 79, 416 (1962)) and the data on the ionicity of the Sn-Hal bonds, obtained by the method of A. L. Schawlow (J. Chem. Phys., 22, 1211 (1954)) and those of M. M. Yakshin et al. (ZhNKh, 6, 2425 (1961)) on refraction and dielectric constant give  $\delta_{\text{ion}} = -(5.6 \pm 0.5) \text{ mm/sec} = -(4.4 \pm 0.4) \cdot 10^{-7} \text{ ev}$ ,

$\Delta R/R(\text{Sr}^{119}) = +(1.9 \pm 0.2) \cdot 10^{-4}$  for a completely ionized bond. These data enable  $|\psi_{5s}(0)|^2$  to be determined directly from  $\delta$ . In the asymmetrical compounds, asymmetrical doublets were observed (Fig. 2) similar to those found by Boyle et al. in  $\text{SnF}_4$ . The asymmetry was found also in dissolved compounds and cannot be explained by a random orientation of the crystals in the direction of the gamma quanta or by ferromagnetic or paramagnetic impurities. From the equation

$$\frac{\sigma_{12 \text{ non}}}{\sigma_{11 \text{ non}}} = \frac{\int_{-1}^{+1} [2\sqrt{5}P_2(\cos\theta) + P_4(\cos\theta)] / (\cos\theta) d\cos\theta}{\int_{-1}^{+1} [2\sqrt{5}P_2(\cos\theta) - P_4(\cos\theta)] / (\cos\theta) d\cos\theta} \quad (3)$$

where the subscript non = total,  $P_L(\cos\theta)$  is the normalized Legendre

Card 2/5

MAKAROV, YE. F.

S/020/62/147/001/018/022  
B101/B144

AUTHORS: Gol'danskiy, V. I., Corresponding Member AS USSR, Gorodinskiy, G. M., Karyagin, S. V., Korytko, L. A., Krizhanskiy, L. M., Makarov, Ye. F., Suzdalev, I. P., Khrapov, V. V.

TITLE: Investigation into the Mössbauer effect in tin compounds

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 147, no. 1, 1962, 127 - 130

TEXT: The Mössbauer effect in the symmetrical compounds  $\text{SnCl}_4$ ,  $\text{SnBr}_4$ ,  $\text{SnI}_4$ ,  $\text{Sn}(\text{C}_6\text{H}_5)_4$  and  $\text{SnO}_2$  and in the asymmetrical compounds  $\text{Ph}_3\text{SnHal}$  ( $\text{Ph} = \text{C}_6\text{H}_5$ ,  $\text{Hal} = \text{F}, \text{Cl}, \text{Br}, \text{I}$ ) was studied using an apparatus in which the absorber moved uniformly with respect to the source and an apparatus with sinusoidal movement.  $\beta\text{-Sn}$  or  $\text{SnO}_2$  were used as sources of the 23.8-kev gamma-quanta ( $\text{Sn}^{119\text{m}}$ ). With the symmetrical compounds the chemical shift  $\delta$  of the absorber lines with respect to  $\beta\text{-Sn}$ , expressed in mm/sec ( $1\text{mm/sec} = 7.9 \cdot 10^{-8} \text{ ev}$ ), was a linear function of the electronegativity of the atoms bound to Sn. The equation  $\delta = 1.6 \cdot 10^{-29} [|\psi_s(0)|^2_{\text{absorb}} - |\psi_s(0)|^2_{\text{emit}}] \Delta R / R_{\text{ev}}$

Card 1/5

Peculiarities of Mössbauer spectra...

3/051/62/040/302/010/055  
B102/3164

on the ratio of R to X. In amorphous media, e.g. in stanniferous glass, the Mössbauer effect was observed for the first time. The glass composition was the following:  $\text{SnO}_2$ -9.1%;  $\text{SiO}_2$ -61.3%;  $\text{B}_2\text{O}_3$ -18.5%;  $\text{Al}_2\text{O}_3$ -5.2%;  $\text{Na}_2\text{O}$ -7.9%. The spectra of crystalline  $\text{Sn}(\text{C}_6\text{H}_5)_4$  and its solid solution in polymethylmethacrylate and of crystalline  $\text{Sn}(\text{C}_2\text{H}_5)_2\text{Cl}_2$  and of its 23 % solution in dichloroethane are identical. Some of the data obtained indicate that the decisive factor determining the shape of the Mössbauer spectra (isomer shift and quadrupole splitting) are the molecular bonds closest to the tin nucleus. There are 5 figures and 1 table.

ASSOCIATION: Institut Khimicheskoy Fiziki Akademii nauk SSSR (Institute of Chemical Physics of the Academy of Sciences USSR)

SUBMITTED: April 12, 1962

Card 2/2

2  
B/056/02/043/002/010/002  
B102/B104

AUTHORS: Bryukhanov, V. A., Gol'danskiy, V. I., Belyagin, E. B.,  
Korytko, L. A., Makarov, Ye. F., Suzdalev, I. P., Shapinskiy, V. G.

TITLE: Peculiarities of Mossbauer spectra of organo-tin compounds  
and the role of the nearest chemical bonds in the Mossbauer  
effect

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 40,  
no. 2(8), 1962, 448-452


TEXT: In continuation of their studies on the Mossbauer effect in  
organo-tin compounds (ZhETF, 42, 637, 1962), the authors determined  
a Mossbauer effect in the resonance absorption of 23.8-kev gamma-quanta by  
 $\text{Sn}^{119}$  nuclei. Many examples, e.g.  $\text{Sn}(\text{C}_6\text{H}_5)_4$ ,  $\text{SnCl}_4$  on the one hand, and  
 $\text{Sn}(\text{C}_6\text{H}_5)_i\text{Cl}_{4-i}$  ( $i=1,2,3$ ) on the other, show that in compounds with four  
identical substituted groups the Mossbauer lines appear as the usual  
singlet, whereas with different substituted groups ( $\text{R}_i\text{SnX}_{4-i}$ ) a distinct  
doublet occurs. The two lines differ in width and intensity, depending  
Card 1/2

Mössbauer effect in tin- ...

S/056/62/042/002/051/055  
B108/B138

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute of Chemical Physics of the Academy of Sciences USSR).  
Institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta (Institute of Nuclear Physics of Moscow State University)

SUBMITTED: December 13, 1961



Card 3/3

S/056/62/042/002/051/055  
B108/B138

Mössbauer effect in tin-

in methylmetacrylate. The tin content in the transparent solid ( $1.2 \text{ g/cm}^3$ ) specimens was 30% by weight. The synthesis of the polymer was described earlier by M. F. Shostakovskiy et al. (ZhPKh, 21, 1434, 1958). The resonance absorption spectra (relative counting rate versus velocity of absorber relative to gamma source) have two equal lines at  $0 \pm 0.2$  and  $3.0 \pm 0.2 \text{ mm/sec}$  with a width of  $0.8 \text{ mm/sec}$  each. This width is somewhat greater than twice the natural width of the excited ( $23.8 \text{ kev}$ ) level of  $\text{Sn}^{119}$ . It is supposed that the observed spectrum is due to quadrupole

interaction of excited  $\text{Sn}^{119}$  nuclei with the nonuniform electric field around the tin atoms in the molecules of the polymer. Another way of interpreting the splitting of the lines is to assume two states of the tin in the polymer molecules, which differ in the density of the orbitals at the site of the nucleus. The resonance absorption probability for gamma quanta without recoil ( $f^1$ ) was 0.04 at  $77^\circ\text{K}$  and about 0.017 at  $195^\circ\text{K}$ . The possibility of observing the Mössbauer effect on impurity nuclei in solid solutions is pointed out. D. A. Kochkin and Yu. M. Kagan are thanked for help and discussions. There are 1 figure and 7 references: 6 Soviet and 1 non-Soviet.

Card 2/3

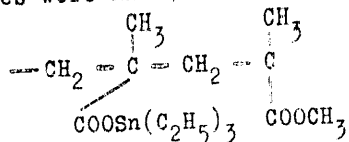
S/056/62/042/002/051/055  
B108/B138

AUTHORS: Bryukhanov, V. A., Gol'danskiy, V. I., Dalyagin, N. M.,  
Makarov, Ye. F., Shpinel', V. S.

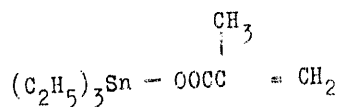
TITLE: Mössbauer effect in tin-containing polymer

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 42,  
no. 2, 1962, 637-639

TEXT: Mössbauer effect in polymers is very weak because polymers usually  
contain only light nuclei and have no distinct crystal structure.  
Successful studies were made, however, with the tin-organic compound



which is the copolymer



Card 1/3

The Measuring of the Xe-135(n, $\gamma$ ) Xe-136 Cross Section  
for the Neutron Spectrum of the Reactor of the Atomic  
Power Plant

89 -1-9/18

Disadvantages of the method:

- a) It is impossible to determine the dependence of the cross section on neutron energy.
- b) For the measuring of  $\sigma_r(T)$  it is necessary to know the absolute neutron current density and the temperature of the neutron gas.

The cross section was determined as being:

$$\sigma = (1.75 \pm 0.15) \cdot 10^6 \text{ b for } T = 800 \pm 50^\circ \text{ K.}$$

There are 4 figures, and 11 references, 2 of which are Slavic.

AVAILABLE: Library of Congress

Card 2/2

- |   |  |
|---|--|
| 1. Neutron cross sections-Determination<br>(Radioactive)-Neutron cross sections | 2. Xenon isotopes<br>3. Neutron spectroscopy |
|---|--|

89 -1-9/18

AUTHORS: Makarov, Ye.F., Samoylova, Z.D.

TITLE: The Measuring of the Xe-135(n, $\gamma$ ) Xe-136 Cross Section for the Neutron Spectrum of the Reactor of the Atomic Power Plant  
(Izmereniye secheniya reaktsii Xe-135(n, $\gamma$ ) Xe-136 dlya spektra neytronov reaktora atomnoy elektrostantsii).

PERIODICAL: Physics and Thermotechniques of Reactors (Fizika i teplotekhnika reaktorov), Supplement Nr 1 to Atomnaya energiya, 1958, (USSR)

ABSTRACT: The reaction cross section was determined by the "burn-up" method. This method offers the following advantages:

- a) The initial activity of Xe-135, with which it is necessary to operate, is less than  $10^{-6}$  C. In other methods activities of  $10^{-5}$  -  $10^{-4}$  C are necessary.
- b) The relative character requires no absolute determination of the Xe-135 atoms.
- c) The average value  $\sigma_r(T)$  is obtained direct.
- d) In a neutron flux of  $\sim 10^{13}$  n/cm<sup>2</sup>.sec a measuring accuracy of  $\pm 5\%$  is attained.

Card 1/2

SOV/58-59-8-17390

A Measurement of the Cross Section for  $\text{Xe}^{135} (n, \gamma) \text{Xe}^{136}$  Reactions for the Neutron Spectrum of an Atomic Power-Plant Reactor

a site corresponding to the maximum density of the thermal neutrons. Subsequently the  $\text{Xe}^{135}$  activity in both samples was measured in a special apparatus. The influence of the interferent activity of  $\text{Xe}^{133}$  was eliminated with the aid of an aluminum absorber. The determination of the absolute density of the neutron beam was effected by measuring the absolute activity of a gold sample, bombarded at the same site as the ampoule containing the  $\text{Xe}^{135}$ . The temperature of the neutron gas was estimated from the measured value of the most probable velocity of the neutrons, and was verified by means of measurements of the temperature of the medium. The estimated value of the average magnitude of the cross section is equal to  $\sigma_n (800 \pm 50^\circ\text{K}) = (1.75 \pm 0.15) \cdot 10^6$  barn. The theoretical estimate of  $\sigma_n$  for  $T = 800^\circ\text{K}$ , based on resonance parameters, gives for the parallel and antiparallel orientation of the neutron spin and of the moment of the target nucleus values of  $1.55 \cdot 10^6$  and  $1.33 \cdot 10^6$  barn respectively. Comparing these magnitudes with those measured experimentally, the authors come to the conclusion that resonance capture occurs principally at the parallel orientation of the neutron spin and nuclear moment of  $\text{Xe}^{135}$ .

I.N.S.

Card 2/2

SOV/58-59-8-17390

Translated from: Referativnyy Zhurnal Fizika, 1959, Nr 8, p 63 (USSR)

AUTHORS: Makarov, Ye.F., Samoylova, Z.D.

TITLE: A Measurement of the Cross Section for  $Xe^{135}$  (n,  $\gamma$ )  $Xe^{136}$  Reactions for the Neutron Spectrum of an Atomic Power-Plant Reactor

PERIODICAL: In the symposium: Fiz. i teplotekhn. reaktorov. Moscow, Atomizdat, 1958, pp112 - 122

ABSTRACT: By means of the "burning-out" method the average value of the cross section for a  $\sigma_n$  (T) reaction of  $Xe^{135}$  (n,  $\gamma$ )  $Xe^{136}$  was measured for the neutron spectrum of an atomic power-plant reactor. The following quantities were measured in the experiment: the ratio of the activities of two samples containing  $Xe^{135}$ , one of which had been bombarded with thermal neutrons in the reactor; the absolute density of the beam of neutrons; and the temperature of the neutron gas at the site of bombardment. The  $Xe^{135}$  emanated from uranic oxide (a 75% concentration of  $U^{235}$ ), which was bombarded with thermal neutrons. Two quartz ampoules of known volumes were filled with a mixture of chemically pure helium and  $Xe^{135}$ , and one of them was bombarded in the reactor at

Card 1/2

MAKAROV, YE. F.

"Measurement of the Effective Cross Section of the  $\text{Be}^9(n,2n)\text{Be}^8$  Reaction for Fission Neutrons," by B. G. Dubovskiy, A. V. Kamayev, and Ye. F. Makarov, Atomnaya Energiya, Vol 2, No 3, Mar 57, pp 279-281

Cross sections of the  $(n,2n)$ ,  $(\gamma,n)$ , and  $(n,\infty)$  reactions in  $\text{Be}^9$  were measured. The energy spectra of emitted neutrons in the  $(n,2n)$  and  $(\gamma,n)$  reactions were studied in their relation to the primary neutron and  $\gamma$ -ray energy spectra.

It was found that the main contribution to neutron multiplication was provided by fission neutrons with energies greater than 4 Mev.

The importance of the study to reactor calculations, for the case when beryllium is used as moderator, is noted. (U)

54M.1360

KOVALENKO, F.N., inzh.; MAKAROV, Ye.F., inzh.; SKIBA, I.V., inzh.

Protection and automatic equipment of a transformer equipped with  
a short circuit and circuit breaker for 110 kv. Elek. sta. 29 no.7:  
84-85 J1 '58. (MIRA 11:10)  
(Electric transformers)

ACC NR: AF/005857

SOURCE CODE: UR/0181/66/008/012/3636/3637

AUTHOR: Makarov, Ye. A.

ORG: Institute of Physics of Semiconductors, SO AN SSSR, Novosibirsk (Institut fiziki poluprovodnikov SO AN SSSR)

TITLE: On the piezoresistance constant  $\pi_{44}$  in n-silicon

SOURCE: Fizika tverdogo tela, v. 8, no. 12, 1966, 3636-3637

TOPIC TAGS: piezoelectric effect, silicon semiconductor, resistivity, elastic deformation

ABSTRACT: Using a formula given by J. C. Hensel et al. (Phys. Rev. v. 138, 225, 1965) for the spectrum of the conduction electrons in undeformed silicon, the author derives an equation for the piezoresistance constant for n-silicon in terms of the specific resistivity and the deformation. Using published numerical values for the constants in the formula, he then obtains a value of  $-12.9 \times 10^{-12} \text{ cm}^2/\text{dyn}$  for the piezoresistance constant, showing that it is not equal to zero, as proposed elsewhere, and is larger than in n-type III-V compounds. It is concluded that the value of  $\pi_{44}$  is due to the deformation of the equal-energy surfaces near the  $\Delta_1$  point. The author thanks A. F. Kravchenko for guidance of the work. Orig. art. has: 4 formulas.

SUB CODE: 20/ SUM DATE: 28Mar66/ ORIG REF: 002/ OTH REF: 003

Card 1/1

KOZHEVNIKOV, N.I.; MAKAROVA, Ye.A.; SITNIK, G.F.

Effect of atmospheric pressure on the half-width of oxygen lines  
in the  $1.27\mu$  band. Astron.zhur. 40 no.6:1095-1100 N-D '63.  
(MIRA 16:12)

1. Gosudarstvennyy astronomicheskiy institut im. P.K.Shternberga.

ZHIVILOVA, L.M., kand.tekhn.nauk; LYUTS'KO, V.V., tekhnik; NEBOL'SINA, T.V.,  
tekhnik; SHKULIN, N.A., inzh.; MAKAROV, Ye.A., inzh.

Automatic device for indicating water hardness. Elek.sta. 32  
no.4:40-44 Ap '61. (MIRA 14:7)  
(Feed-water purification)  
(Chemical engineering--Equipment and supplies)

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031500038-6

MAKAROV, YE. A.

DECEASED

1961/3

c1961

SEE ILC

CONSTRUCTION INDUSTRY

MAKAROV, Ye., nauchnyy sotrudnik

For precise measurements. Nauka i zhizn' 30 no.3:94-96 Mr '63.  
(MIRA 16:5)

1. Institut khimicheskoy fiziki AN SSSR.  
(Mossbauer effect) (Electronic measurements)

MAKAROV, V.Ya.

At the refuse sorting plant in Prague. Gor.khoz.Mosk. 30 no.11:34-35  
N '56. (MIRA 10:3)  
(Prague--Refuse destructors)

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031500038-6

MAKAROV, V.V., kand. sel'skokhozyaystvennykh nauk

Drying of retted straw. Tekst. prom. 18 no. 4: 7-8 Ap '58.  
(Retting) (MIRA 11:4)

MAKAROV, V.V., kandidat sel'skokhozyaystvennykh nauk.

Obtaining fiber from flax bast through steaming. Dokl. Akad. sel'khoz.  
22 no. 1:7-10 '57. (MLBA 10:2)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut 1<sup>na</sup>. Predstavlena  
akademikom I.S. Varyantsyanom.  
(Fibers) (Flax)

MAKAROV, V.V., kandidat sel'skokhozyaystvennykh nauk.

Changes in the physicochemical properties of flax straw when converted into bast and bast into fiber. Dokl. Akad. sel'khoz. 22 no.4:8-9 '57.  
(MLRA 10:6)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut l'na. Predstavlena akademikom I.V. Yakushkinym.  
(Flax)

MAKAROV, V. V.

Pervichnaya Obrabotka L'na. (Primary Working of Flax)  
Moskva, Sel'khozgiz, 1950 174 P. Illus., Tables, Diagrams.  
At Head of Title: Uchebniki i Uchebnyye Posobiya Dlya  
Podgotovki Sel'skokhozyaystvennykh Kadrov Massovoy Kvalifikatsii.

So: N/5  
729.15  
.M2

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031500038-6

MAKAROV, V. V.

MAKAROV, V. V. -- "Cold-Water Retting of Flax." Latvian Agricultural Academy, 1948  
(Dissertation for the Degree of Candidate of Agricultural Sciences)

SO: Izvestiya Ak. Nauk Latvyskoy SSR, No. 9, Sept., 1955

MAKAROV, V.V.

11E

CA

The antirachitic properties of vetch oats and clover hay.  
V.V. Makarov, Problems Animal Husbandry (U.S.S.R) 1935, No. 8,  
 DO-3.-In compounding a winter ration for young colts the quantity  
 of clover or vetch-oat hay must not exceed 5% of the feed, calcd.  
 on starch equivs. The antirachitic properties of hay are discussed.

S.A. Karjola

ASTM-S-1 METALLURGICAL LITERATURE CLASSIFICATION

ACC NR: AP6036997

for both electron and ion bombardment the cathodoluminescence spectrum is due to carrier (or exciton) recombination on the crystal-structure defects. The activation energy for the quenching of the green band in the spectrum was found to be 0.09 - 0.11 ev, indicating that the glow is due to transitions of the electrons from the nitrogen levels to the acceptor levels resulting from the irradiation, with probable location 0.2 - 0.4 ev above the top of the valence band. The results are compared with those obtained by others. The authors thank M. B. Reyfman for supplying the SiC samples, A. M. Khomyakov and A. S. Andreyev for irradiating the samples with electrons, and M. A. Yeremeyev, I. A. Abroyan, and Yu. A. Vodakov for useful discussions. Orig. art. has: 2 figures.

SUB CODE: 20/ SUBM DATE: 20May66/ ORIG REF: 002/ OTH REF: 002

Card- 2/2

ACC NR: AP6036997 (A,N) SOURCE CODE: UR/0181/66/008/011/3393/3394

AUTHOR: Makarov, V. V.; Petrov, N. N.

ORG: Leningrad Polytechnic Institute im. M. I. Kalinin (Leningradskiy politekhnicheskiy institut)

TITLE: Cathodoluminescence of single crystals of silicon carbide irradiated with fast electrons

SOURCE: Fizika tverdogo tela, v. 8, no. 11, 1966, 3393-3394

TOPIC TAGS: silicon carbide, electron bombardment, ion bombardment, cathodoluminescence, luminescence spectrum, crystal defect, exciton, electron recombination

ABSTRACT: The authors investigated the influence of electron bombardment with energy 2 Mev on cathodoluminescence of single-crystal SiC (n-type samples,  $10^{17} - 10^{19} \text{ cm}^{-3}$  nitrogen atoms, and p-type  $10^{18} - 10^{19} \text{ cm}^{-3}$  boron or aluminum atoms). The sample thickness was 0.2 - 1 mm and the irradiation dose was  $10^{15} - 10^{18} \text{ el/cm}^2$ . The luminescence was excited with an electron beam of energy up to 10 kev at a current density  $10^{-5} - 10^{-4} \text{ amp/cm}^2$ . The measurements were made with samples cooled to 77K. The observed spectrum turned out to be insensitive to subsequent heating and etching, indicating that the effect is produced in the entire volume of the crystal. A similar spectrum was obtained also when the crystals were bombarded with positive ions ( $\text{Li}^+$ ,  $\text{K}^+$ ,  $\text{N}_2^+$ ,  $\text{H}^+$ ,  $\text{Ar}^+$ ), apart from differences in the fine structure. The results, in conjunction with earlier data by the authors (FTT v. 8, 1602, 1966) indicate that

L 36323-66

ACC NR: AP6015793

2

old energy. To convert the cathodoluminescence thresholds to ion penetration depths, it is necessary to know the penetration depths of electrons of different energies. As electron penetration data are lacking for SiC, the data of A.Ya.Vyatskin and A.F. Makhov (Zh. tekhn. fiz., 28, 740 (1958)) for Si were used instead. The penetration depth in Å of a  $\text{Li}^+$  ion with an energy of  $E$  keV was found to be  $350E^{0.77}$ . These penetration depths are several times greater than those found by McCargo, F.Brown, and A.I.Davies (Canad. J.Chem. 41, 2309 (1963)) for penetration of  $\text{Na}^+$  ions into Al, and are very close to those found by J.Young (J.Appl. Phys., 27, 1 (1956)) for penetration of  $\text{H}^+$  and  $\text{He}^+$  ions into Al. The authors thank M.A.Yeremeyev for valuable discussions and M.B.Reyfman for providing the SiC crystals. Orig. art. has: 2 figures.

SUB CODE: 20/

SUM DATE: 00/

ORIG REF: 004/

OTH REF: 004

dx

Card 2/2

L 36323-66 EWT(1)/EWT(m)/T/EWP(e)/EWP(t)/ETI IJP(e) AT/WH/JD/JG  
 ACC NR: AP6015793 (A.N) SOURCE CODE: UR/0048/66/030/005/0890/0891  
 AUTHOR: Makarov, V. V.; Petrov, N. N.  
 ORG: Leningrad Polytechnic Institute im. M.I.Kalinin (Leningradskiy politekhnicheskii institut)  
 TITLE: Penetration of 2 to 11 keV lithium ions into silicon carbide single crystals /Report, Twelfth All-Union Conference on the Physical Bases of Cathode Electronics held in Leningrad 22-26 October 1965/  
 SOURCE: AN SSSR. Izvestiya, Seriya fizicheskaya, v. 30, no. 5, 1966, 890-891  
 TOPIC TAGS: cathodoluminescence, ion beam, radiation damage, lithium, silicon carbide, single crystal  
 ABSTRACT: The cathodoluminescence of SiC single crystals ( $\alpha$  modification) previously bombarded with 2-11 keV  $\text{Li}^+$  ions has been investigated in order to determine the penetration depth of the ions. Plates cut parallel to the (0001) faces were bombarded with monoenergetic  $\text{Li}^+$  ions (dose,  $10^{16}$  ions/cm<sup>2</sup>), and the intensity of the 5200 Å cathodoluminescence of each plate was subsequently determined at 77° K as a function of the energy of the exciting electrons. Luminescence was observed only when the electron energy exceeded a threshold value which depended on the energy of the ions with which the crystal had previously been bombarded. It was assumed that the penetration depth of the bombarding ions was equal to that of electrons having the thresh-

Card 1/2

MAKAROV, V. V.

Applying norms in planning labor productivity. Sots. trud  
7 no.5:80-82 My '62. (MIRA 15:5)  
(Oil well drilling--Production standards)

MAKAROV, V.V.

Improving labor productivity planning in the oil field industry. Neft.  
khvz, 39 no.8:5-9 Ag '61. (MIRA 14:7)  
(Oil fields--Production methods)

MAKAROV, V. V.

AID P - 2731

Subject : USSR/Mining

Card 1/1 Pub. 78 - 1/22

Author : Makarov, V. V.

Title : ~~Work efficiency in oil recovery and ways to improve it~~

Periodical : Neft. khoz., 33, 7, 1-4, J1 1955

Abstract : Data of oil recovery in 1954 are compared with previous years. The application of new methods of production, increased mechanization, improved management, drilling of new wells, extended secondary recovery, etc. have resulted in an increased production and an optimistic outlook for the future.

Institution : None

Submitted : No date

MAKAROV, V.V.

Extend the rights of enterprises, strengthen business accounting  
in drilling; a topic for discussion. Neft. khoz. 43 no.3:9-11  
Mar '65. (MIRA 18:6)

L 00581-66

ACCESSION NR: AP5021609

ENCLOSURE: 01

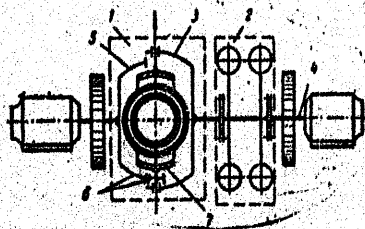


Fig. 1. 1- gyroscope; 2- investigated system;  
3- first frame; 4- shaft; 5- second frame;  
6- gear system; 7- third frame

Card 3/3

*yw*

L 00581-66

ACCESSION NR: AP5021609

SUBMITTED: 22May63

NO REF SOV: 000

ENCL: 01

SUB CODE: AS

OTHER: 000

Card 2/3

I 00581-66

ACCESSION NR: AP5021609

UR/0286/65/000/013/0078/0078

AUTHORS: Bolgov, A. T.; Makarov, V. V.

TITLE: Device for exciting torsional sinusoidal oscillations. Class 42, No. 172521

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 13, 1965, 78

TOPIC TAGS: torsional vibration

ABSTRACT: This Author Certificate presents a device for exciting sinusoidal oscillations in a system having a rotary shaft. The device contains an electric motor coupled to one end of the rotary shaft to rotate it. To broaden the limits of oscillation control in frequency and amplitude while preserving the sinusoidal form, the device is provided with a three-stage gyroscope (see Fig. 1 on the Enclosure). One of the gyroscope frame axes is coupled mechanically to the other end of the rotary shaft of the system. The second frame is provided with an independent electric drive to rotate it and is coupled kinematically, e.g., by a system of gears, to the axis of the inner third frame on which the gyroscope rotor is mounted. Orig. art. has: 1 diagram.

ASSOCIATION: none

Card 1/3

L 46940-66

ACC NR: AP6015489

explained by the presence of Al-N donor-acceptor pairs. The authors are grateful to M. B. Reyfman for making SiC single crystals available for the experiments, to Yu. A. Vodakov for making specimens available with a known concentration of impurities, to M. A. Yeremeyev for his interest in the work and his valuable suggestions, and to V. I. Sokolov for the useful discussions. Orig. art. has: 5 figures.

SUB CODE: 20/

SUBM DATE: 10Jul65/

ORIG REF: 006/

OTH REF: 010

*alum*  
Card 2/2

L 46940-66 EWT(1)/EWP(e)/EWT(m)/EWP(t)/ETI IJP(c) JD/JG/AT/WH  
 ACC NR: AP6015489 (A) SOURCE CODE: UR/0181/66/008/005/1602/1607  
 AUTHOR: Makarov, V. V.; Petrov, N. N. 77  
 74  
 B  
 ORG: Leningrad Polytechnic Institute im. M. I. Kalinina (Leningradskiy politekhni-  
 cheskiy institut)  
 TITLE: Effect of ion bombardment on the cathodoluminescence of SiC 27 27  
 SOURCE: Fizika tverdogo tela, v. 8, no. 5, 1966, 1602-1607  
 TOPIC TAGS: cathodoluminescence, silicon semiconductor, silicon carbide, ion bombard-  
 ment  
 ABSTRACT: Cathodoluminescence spectra of 6H SiC crystals were examined during bom-  
 bardment by  $K^+$  with energies in the 2 to 11 kev range. The ions of  $K^+$  were produced by  
 thermal dissociation of  $K_2CO_3$ . Bombardment and heating up to 1000°C produced a consi-  
 derable change in the spectral composition of the radiation in the photon energy range  
 of 2.64 to 2.45 ev. In this range, a system of narrow intense lines and bands with a  
 halfwidth of 0.002 to 0.1 ev was observed. Narrow lines also appeared in the 2.86 to  
 2.69 and 2.52 to 2.2 ev ranges, even though ion bombardment is not a necessary condi-  
 tion for their appearance. The cathodoluminescence spectra of opposite crystal sides  
 differ in these photon energy intervals. The emergence of a green band after bombard-  
 ment of the order of  $10^{17}$  particles per  $cm^2$  and subsequent heating to 1200°C may be

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ACCESSION NO: A14045292

Before dying slowly away. It was found that a cold target emitted a greater proportion of low energy secondary ions after long continued bombardment than when it was fresh. The results are discussed in terms of diffusion of adsorbed ions to the surface of the target and the influence of adsorbed ions on the target work function. The authors are deeply grateful to M.A. Ferns for his interest and valuable remarks. Original has 7 figures.

ASSOCIATION: Leningradskiy politekhnicheskii institut (Leningrad Polytechnic Institute)

SUBMITTED: 00

SUB CODE: NY, RM

NR REF SOV: 014

ENCL: 00

OTHER: 004

1. 12-018-65

ACCESSION NR: A4045282

retarding fields. The secondary emission of a fresh target was determined at temperatures above  $1400^{\circ}\text{K}$ . Before each series of measurements the target was heated at  $2300^{\circ}\text{K}$  and flashed to  $2600^{\circ}\text{K}$ , and before each measurement (which was made as quickly as possible) the target was reflash to  $2000^{\circ}\text{K}$ . Measurements made under these conditions were reproducible. The secondary electron emission was found to increase linearly with the energy of the incident ions for energies greater than about 2 keV. The secondary ions were found to contain a greater proportion of relatively high energy ions at moderate incident ion energies (about 2 keV) than at higher energies. This effect was more marked for  $\text{K}^+$  than for  $\text{Ca}^+$  ions. When the target was bombarded continuously ( $6 \times 10^{-8}$  A on an  $0.2 \text{ cm}^2$  area) the secondary ion emission ratio increased with time until, after long continued bombardment (of the order of 10 min, depending on circumstances) it reached a large steady value (10%) independent of the beam energy. Under some conditions the secondary emission decreased during the first few tens of seconds of bombardment and passed through a minimum before beginning to rise. When the beam was cut off after long continued bombardment the secondary current did not drop at once to zero, but fell to some finite value, from which it subsequently decreased with time. Under some conditions the following 'make-up' phenomenon was observed: when the beam was cut off the ion current would first drop and then rise for a few seconds and pass through a maximum

[illegible]

ANTHONY, Albert J. N.Y.; PASCOR, K.N.

Topic: Effect of ion bombardment on the secondary emission of metals  
 Date Conducted: on Cathode Electronics held in Nov 11-15 Nov 1965 Report, 1965

Номер: АХ 3628 Investigatsiya Seriya Sluchivshasaya v.28 no.8 1981 1416-1432

**Related Terms:** ion bombardment, secondary emission, ion emission, electron emission, ionization, photoionization

**ABSTRACT.** The emission of secondary ions and electrons by a titanium target bombarded with 1.2 MeV  $K^+$  or  $Ca^+$  ions was measured, and its dependence on the dose and the temperature of the target was investigated in order to determine the influence on secondary emission of absorbed ions and ions that have penetrated into the target. The beam from the ion source was purged of neutral particles by its energy, and was ionized before being accelerated to the final energy, and was ionized on the target at  $45^\circ$ . The secondary particles were collected in all directions and could be distinguished with respect to the sign of their charge and to their energy with respect to energy by means of a grid and appropriate

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Some characteristics of the biology of mint flowering. Biol.  
Glav. bot. sada no.53:61-66 '64. (MIRA 17:6)

1. Glavnyy botanicheskiy sad Akademii nauk SSSR.

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031500038-6

NEYSHTADT, Mark Il'ich; PRIDANTSEVA, A.M., red.; MAKAROV, V.V.,  
red.; TSYPPPO, R.V., tekhn. red.

[A guide for plants of the central zone of the European  
part of the U.S.S.R.] Opređelitel' rastenii srednei pology  
Evropeiskoi chasti SSSR; posobie dlia studentov pedagogi-  
cheskikh institutov i uchitelei. Izd.6., perer. i dop.  
Moskva, Uchpedgiz, 1963. 639 p. (MIRA 17:2)

MAKAROV, V.V.; D'YAKOVA, K.G.

Catching desmans in the Khoper Preserve in 1956-1957. Trudy  
Khop.gos.zap. no.3:5-14 '59. (MIRA 16:1)  
(Khoper Preserve--Desmans)

MAKAROV, V. V.  
USSR/Biology - Beaver habits

Card 1/1 : Pub. 86 - 23/36

Authors : Makarov, V. V.

Title : On the biology of the beaver

Periodical : Priroda 43/8, 112-114, Aug 1954

Abstract : The article recounts how beavers were set free near the Oka River and their habits are being observed. It was noted that they at first lived in burrows but are now building little huts, along with their other activities in building dams and felling trees. Illustrations.

Institution : Moscow State Pedagogical Institute imeni V.P. Potemkin.

Submitted : ...

MAKAROV, V. V.

"Controlled Feeding and Controlled Growth of Swine as a Mass Method for Improving Breeding Herds." Cand Agr Sci, All-Union Sci-Res Inst of Animal Husbandry, Moscow, 1954. (IL, No 7, Feb 55)

30: Sum. No. 631, 26 Aug 55-Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (14)

BUZYKIN, Yuriy Il'ich; MAKAROV, V.V., red.; PONOMAREVA, A.A.,  
tekhn. red.

[West-European integration in the third stage of the general  
crisis of capitalism] Zapadnoevropeiskaia integratsiia na  
tret'iem etape obshchego krizisa kapitalizma. Moskva, Ekonom-  
izdat, 1963. 142 p. (MIRA 16:7)  
(European Economic Community)

BOLGOV, A.I., kand. tekhn. nauk, dotsent; MAKAROV, V.V., kand. tekhn. nauk,  
dotsent; MINAYEV, A.N., kand. tekhn. nauk, dotsent

Criterionai relation of damping coefficients of a motor unit and basic  
parameters of the rotating system. Izv.vys.ucheb.zav.; mashinost. no.5:  
46-51 '64. (MIRA 13-6)

1. Altayskiy politekhnicheskii institut.

MAKAROV, Valentin Vasil'yevich; ROSHCHINA, L., red.; MOSKVINA, R.,  
tekhn. red

[Nigeria; a sketch of the economy] Nigeria; ekonomicheskii  
oчерk. Moskva, Sotsekgiz, 1962. 142 p. (MIRA 16:1)  
(Nigeria--Economic conditions)

MAKAROV, V.V., kand.tekhn.nauk

Reducing the amount of labor expended in maintaining road machinery, Avt.dor. 23 no.3:14-15 Mr '60. (MIRA 13:6)  
(Road machinery--Maintenance and repair)

BROUNSHTEYN, B.I.; MAKAROV, V.V.

Conditions of cavitation in pulse columns. Trudy VNIIneftekhim  
no.5:195-205 '62. (MIRA 15:7)  
(Extraction (Chemistry))  
(Cavitation)

MAKAROV, V.V.

MAKAROV, V.V. "Investigation of heat Exchange in the Expansion Process of an Engine with Forced Ignition." Min Higher Education USSR. Tomsk Order of Labor Red Banner Polytechnic Inst imeni S.M. Kirov. Tomsk, 1956. (Dissertation for the Degree of Candidate in Technical Science)

So: KNizhnaya Letopis', No. 18, 1956,

MAKAROV, V.T.; YURIN, P.V.; SPIRIDONOV, Yu.Ya.

New methods of cultivating corn in turf-Podzolic soils. Vest.  
Mosk.un.Ser.6: Biol., pochv. 19 no.1:61-73 Ja- '64.

1. Kafedra zemledeliya Moskovskogo universiteta. (MIRA 17:4)

REMEZOV, Nil Petrovich, prof.; MAKAROV, Vasiliy Timofeyevich, prof.;  
POMALEN'KAYA, O.T., red.; GEORGIYEVA, G.I., tekhn. red.

[Soil science with the fundamentals of agriculture] Pochvovedenie s osnovami zemledeliia. Moskva, Izd-vo Mosk. univ. 1963.  
475 p. (MIRA 16:7)

(Soil science) (Agriculture)

KESHEVA, A.T.; MAKAROV, V.T., doktor, prof., rukovoditel' raboty

Some means of improving the yield of winter wheat in the  
Kabardino-Balkar A.S.S.R. Uch. zap. Kab.-Balk. gos. un. no.12:  
121-129 '62. (MIRA 16:6)

(Kabardino-Balkar A.S.S.R.--Wheat)

MAKAROV, V.T., doktor sel'skokhozyaystvennykh nauk, prof.

Biological, organizational and economic bases of the rotation  
of crops. Biol.v shkole no.4:74-78 J1-Ag '62. (MIRA 15:12)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova.  
(Rotation of crops)

MAKAROV, V.T., prof., doktor sel'skokhoz.nauk; LEBEDEVA, G.F., kand.biolog.-  
nauk

Cultivation characteristics of forage cabbage on peat-bog soils.  
Zhivotnovodstvo 23 no.2:20-22 F '61. (MIRA 15:11)  
(Cabbage) (Peat soils)

MAKAROV, V.T.; MILOSLAVSKAYA, G.M.

Dynamics of organic matter in turf-Podzolic soils during the  
period marked by the aftereffect of different plowing methods.  
Nauch. dokl. vys. shkoly; biol. nauki no. 1:207-212 '61.  
(MIRA 14:2)

1. Rekomendovana kafedroy zemledeliya Moskovskogo gosudarstvennogo  
universiteta im. M.V. Lomonosova.  
(HUMUS) (PODZOL) (PLOWING)

VILENSKIY, D.G., prof., red. [deceased]; DOBROVOL'SKIY, B.V., prof.,  
red.; MAKAROV, V.T., prof., red.

[Studies of natural conditions relating to agriculture in the  
Meshchera Lowland] Issledovanie prirodnykh uslovii sel'skogo  
khoziaistva Meshcherskoi nizmennosti. Pod red. D.G.Vilenskogo,  
B.V.Dobrovol'skogo i V.T.Makarova. Moskva, Izd-vo Mosk.univ.  
Vol.1. 1961. 299 p. (MIRA 14:4)

1. Orsko-Meshcherskaya kompleksnaya ekspeditsiya.  
(Meshchera--Soils)

MAKAROV, V.T.

In memory of Professor D.G.Vilenskii. Nauch. dokl. vys. shkoly;  
biol. nauki no.3:220 '60. (MIRA 13:8)  
(Vilenskii, Dmitrii Germogenovich, 1892-1960)

MAKAROV, V.T.

Effect of cultivated plants on the fertility of turf-Podzolic  
soils under different conditions of cultivation. Vest.Mosk.un.  
Ser.biol., pochv., geol., geog. 14 no.4:41-51 '59. (MIRA 13:6)

1. Kafedra zemledeliya Moskovskogo universiteta.  
(Tillage) (Crops and soils)

REPIN, I. F.: MAKAROV, V.

(Reviewed by L. M. Raskin)

Potatoes

Books of innovators ("How we achieved a large potato harvest," I. F. Repin, and "How we Obtained a large Harvest," -V. Makarov.) - Reviewed by L. M. Raskin  
Sad i og. No. 3, 1952.

Monthly List of Russian Accessions, Library of Congress, May 1952 UNCLASSIFIED.

1. MAKAROV, V. T.
2. USSR (600)
4. Agriculture
7. Timber and hunting economy of Tomsk oblast. Collected articles. Tomsk, Izd. Gos. Universiteta, 1952.

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1. Makarov, V.T. (Prof.)
2. USSR (600)
4. ASINO DISTRICT - AGRICULTURE
7. Work results of the expedition of Tomsk University for helping collective farms of Asino District (Tomsk Province) to adopt grassland agriculture. Trudy Tomsk. un. 114, 1951.

9. Monthly list of Russian accessions. library of Congress, March 1953 Unclassified

1. MAKAROV, V. T., Prof.
2. USSR (600)
4. Tomsk Province - Clover
7. Producing high yields of clover seed in Tomsk Province. Trudy Tomsk. un<sup>114</sup> 1951.

9. Monthly List of Russian Accessions, Library of Congress, March 1953. Unclassified.

MAKAROV, V.

20029 MAKAROV, V. Nash metod povysheniya effektivnosti otkorma sviney. [Kontrol'no opyt. stantsiya po otkormer sviney Vsesoyuz. nauch.-is-sled. in-ta myasnoy prom-sti]. Myas industriya SSSR, 1949, No. 3, s. 69-70.

SO: LETOPIS ZHURNAL STATEY, Vol. 27, Moskva, 1949.

1ST AND 2ND ORDERS		3RD AND 4TH ORDERS	
PROCESSING AND PROPERTIES INDEX			
<p>CA</p> <p>The problem of liming the soils of the Tartar ASSR. V. F. Makarov. <i>Uchenye Zapiski Kazan. Gosudarst. Univ.</i> 101, No. 2, Agron. Ryad. No. 3, 5 211-2111. In this monograph, profile analyses of close to 200,000 ha. of soil in various stages of podzolization are given. The analyses include pH, hydrolytic acidity, exchange acidity and basicity (Mg and Ca), humus content, and P<sub>2</sub>O<sub>5</sub>. Data are available on the natural resources of liming materials. Exptl. data on the response of lime are presented. Methods for the detn. of lime requirement are given. I. S. Ioffe</p>			
COMMON ELEMENTS			
MATERIALS INDEX			
ASS-SLA METALLURGICAL LITERATURE CLASSIFICATION			
ADDITIONAL INDEX			
1ST AND 2ND ORDERS			
3RD AND 4TH ORDERS			

111 AND 112 SERIES <b>MAKAROV, V. T.</b>		113 AND 114 SERIES PERIODICAL AND PROCEEDINGS INDEX	
115 AND 116 SERIES <b>BC.</b>		117 AND 118 SERIES <b>B-III-1</b>	
<p>           Calcium salt resources of Tartary in relation to soil fertility. <b>V. MAKAROV</b> (Sci. Mem. Kazan State Univ., 1938, 88, No. 4, 3--21).--Various deposits of Ca salts (chiefly <math>\text{CaSO}_4</math>) found in the Tartar R.S.R. are described. Directions for addition of Ca salts to various soils are given. <b>R. T.</b> </p>			
119 AND 120 SERIES 121 AND 122 SERIES 123 AND 124 SERIES 125 AND 126 SERIES 127 AND 128 SERIES 129 AND 130 SERIES 131 AND 132 SERIES 133 AND 134 SERIES 135 AND 136 SERIES 137 AND 138 SERIES 139 AND 140 SERIES 141 AND 142 SERIES 143 AND 144 SERIES 145 AND 146 SERIES 147 AND 148 SERIES 149 AND 150 SERIES 151 AND 152 SERIES 153 AND 154 SERIES 155 AND 156 SERIES 157 AND 158 SERIES 159 AND 160 SERIES 161 AND 162 SERIES 163 AND 164 SERIES 165 AND 166 SERIES 167 AND 168 SERIES 169 AND 170 SERIES 171 AND 172 SERIES 173 AND 174 SERIES 175 AND 176 SERIES 177 AND 178 SERIES 179 AND 180 SERIES 181 AND 182 SERIES 183 AND 184 SERIES 185 AND 186 SERIES 187 AND 188 SERIES 189 AND 190 SERIES 191 AND 192 SERIES 193 AND 194 SERIES 195 AND 196 SERIES 197 AND 198 SERIES 199 AND 200 SERIES			

The University of People's Albania

3-58-2-27/33

stations, introduction of productional methods for new kinds of production, clinical study, methods of treatment and prevention of some diseases, behavior of solids in a field of radiation, and behavior of gasses in electromagnetic fields. Questions of history, language, literature, state and law, and economics of Albania are also being profoundly studied.

ASSOCIATION: Tiranskiy gosudarstvennyy universitet (Tirana State University)

AVAILABLE: Library of Congress

Card 3/3

The University of People's Albania

3-58-2-27/33

One of the basic faculties is in natural sciences with its two departments: the physico-mathematical and bio-chemical. The faculty has a Museum of Natural Science.

The Engineering Faculty has 4 departments - electro-engineering, mechanical, construction and geological. Attached to it is a Museum of Geology.

The chairs of the Medical Faculty have well equipped clinics and laboratories.

The University has a library of over 300,000 national and foreign books, journals, etc. The present number of students is 1,600 in the day departments, 884 at the evening courses and 962 in correspondence. In 1957, the number of students admitted to the 1st course was 450. It is planned that this number will be increased to 830 in 1962. The number of instructors will also increase. At present, there are 220 instructors, including 25 holding scientific degrees, 30 scientific workers and 115 laboratory workers. The number of professors and instructors will be doubled within 5 years.

The chairs are working on the development of a number of problems of scientific and economic importance, in particular, the natural resources of Albania and their rational utilization, increase of machine productivity, construction, power

Card 2/3

*MAKAROV, V. T.*

3-58-2-27/33

**AUTHORS:** Kelychi, Ziya, Dotsent, Rector of Tirana State University  
Makarov, V.T., Professor, Doctor of Biological Sciences

**TITLE:** The University of People's Albania (Universitet narodnoy Albanii)

**PERIODICAL:** Vestnik Vysshey Shkoly, 1958, # 2, pp 81 - 82 (USSR)

**ABSTRACT:** After pointing out the recent cultural achievements of Albania, the article gives particulars on the Tirana State University which was opened on 1 September 1957.

The country's 5 institutes (pedagogical, economic, polytechnical, medical and scientific) served as a basis for the establishment of the Tirana University with its 6 faculties and 15 specialties.

The Historical-Philological Faculties training specialists in history, Albanian language and literature as well as the Russian language. Attached to the faculty is a Scientific-Research Institute on Albanian History, Language and Literature and a Museum of Archeology and Ethnography.

The Economic Faculty (for planning the national economy, economics of industry, finances, statistics and recording, geography) is training specialists in economics and finance.

The Juridical Faculty consists of chairs of state theory and history and law, criminal law, civil law and international law.

Card 1/3

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MAKAROV, V.S.

Reprinted on a Labachevskii plane. Vol. 101. 1964. 101 p.  
1-5 '64

MAKAROV. V.S.

A class of partitions of Lobachevskii space. Dokl. AN SSSR 161  
no.2:271-278 Mr '65. (MIRA 18:4)

1. Matematicheskii institut im. V.A.Steklova AN SSSR. Submitted  
October 13, 1964.

MAKAROV, V.S.

Possibility of utilizing bioplast for filling pleural cavities  
following pneumonectomy. Vest. khir. 85 no. 7:49-59 Je '60.  
(MIRA 14:1)

(LUNGS---SURGERY)